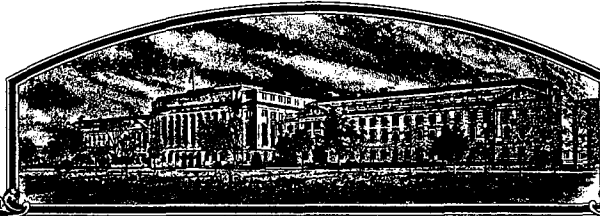


No.

8700036



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Northrup King Co.

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CORN

'764'



In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D. C. this 30th day of June in the year of our Lord one thousand nine hundred and eighty-seven.

Attest:

Kenneth H. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Richard E. Lyng
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

FORM APPROVED: OMB NO. 0581-0055

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)


1. NAME OF APPLICANT(S) Northrup King Co.		2. TEMPORARY DESIGNATION H292-5		3. VARIETY NAME 764	
4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) P.O. Box 959 Minneapolis, MN 55440		5. PHONE (Include area code) (612) 593-7305		FOR OFFICIAL USE ONLY PVPO NUMBER 8700036	
6. GENUS AND SPECIES NAME <u>Zea mays</u> L.		7. FAMILY NAME (Botanical) Gramineae		FILING DATE <u>December 30, 1986</u> TIME <u>9:30</u> <input checked="" type="checkbox"/> A.M. <input type="checkbox"/> P.M.	
8. KIND NAME Corn		9. DATE OF DETERMINATION February 1984		AMOUNT FOR FILING \$ <u>1800.00</u> DATE <u>December 30, 1986</u>	
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation				FEE RECEIVED AMOUNT FOR CERTIFICATE \$ <u>200.00</u> DATE <u>May 11, 1987</u>	
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Delaware				12. DATE OF INCORPORATION 1896	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Dr. Robert Romig Northrup King Co. P.O. Box 959 Minneapolis, MN 55440 PHONE (Include area code): (612) 593-7305					
14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED a. <input checked="" type="checkbox"/> Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.) b. <input checked="" type="checkbox"/> Exhibit B, Novelty Statement. c. <input checked="" type="checkbox"/> Exhibit C, Objective Description of Variety (Request form from Plant Variety Protection Office.) d. <input type="checkbox"/> Exhibit D, Additional Description of Variety. e. <input checked="" type="checkbox"/> Exhibit E, Statement of the Basis of Applicant's Ownership.					
15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act.) <input type="checkbox"/> Yes (If "Yes," answer items 16 and 17 below) <input checked="" type="checkbox"/> No					
16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> Foundation <input type="checkbox"/> Registered <input type="checkbox"/> Certified			
18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.? <input type="checkbox"/> Yes (If "Yes," give date) <input checked="" type="checkbox"/> No					
19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> Yes (If "Yes," give names of countries and dates) <input checked="" type="checkbox"/> No					
20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.					
SIGNATURE OF APPLICANT 				DATE December 23, 1986	
SIGNATURE OF APPLICANT				DATE 1	

EXHIBIT A

Origin and Breeding History of the Inbred

1. 764 was derived from the single cross, 235 x B73. 235 is a Northrup King proprietary line derived from a multiple ear source crossed into Minnesota A635, a public B14 derivative. B73 is a public inbred developed and released by Iowa State University, originating from Iowa Stiff Stalk Synthetic, a broad-base synthetic. The breeding method used was simple pedigreed ear to row.
2. The breeding history of inbred 764 is as follows:

1972	Winter Hawaii--initial cross made.
1973	Spring Hawaii--F ₁ selfed to create F ₂ population.
1973	Hampton, Iowa--About 500 F ₂ plants grown and self-pollinated, 50 ears selected primarily on the basis of silking date, but with some selection pressure for stalk quality and earing ability, F ₂ S ₁ generation.
1974	Glen Haven, WI--F ₂ S ₁ ear rows selfed, with continued selection pressure for early silk date, stalk quality, earing ability, and seed quality, F ₂ S ₂ generation.
1975	Glen Haven, WI--F ₂ S ₂ ear rows selfed, with continued selection pressure for early silking, stalk quality and earing ability, F ₂ S ₃ generation.
1978	Glen Haven, WI--F ₂ S ₃ ear rows selfed, with continued selection pressure for early silking, stalk quality, ear size and seed quality, F ₂ S ₄ generation, first test cross seed made in Hawaii.
1979	Glen Haven, WI--F ₂ S ₄ ear rows selfed, with continued selection pressure for early silking, stalk quality, ear size and seed quality, F ₂ S ₅ generation, first test cross data made with S ₄ 's, test crosses remade.
1980	Glen Haven, WI--F ₂ S ₅ ear rows selfed, with selection pressure only for uniformity and agronomic type among test cross survivors, F ₂ S ₆ generation, test crosses remade.
1981	Glen Haven, WI--Test crosses were evaluated and uniformity along and within progeny rows of the F ₂ S ₆ generation was checked.
1981-82	Winter Hawaii--A single F ₂ S ₆ ear culture was selfed and bulk-harvested for inbred seed for wide area testing.
1982-83	Glen Haven, WI--Wide area testing across 23 locations and with 4 testers was conducted and evaluated for yield, maturity, stalk and root quality, ear retention, and some disease and insect reactions.
1984	Glen Haven, WI--Final uniform 764 was grown and self-pollinated to create Breeders Seed. The source was a self-bulk F ₂ S ₇ off of an F ₂ S ₆ ear row. The Breeders Seed is F ₂ S ₈ .
3. We have not seen any variants or lack of stability in inbred 764. It is very uniform, very stable, and appears to be homozygous for all discernible characters.

EXHIBIT B

Inbred 764 is and resembles an early recovery of Iowa's B73. It differs from B73 in many characters, however. The most obvious of these are shown below.

	<u>B73</u>	<u>764</u>
1. Silking date (growing degree days)	1540	1400
2. Plant height (cm.)	210	170
3. Ear length (cm.)	17	12
4. Kernel row number	16	14
5. Endosperm	soft	medium

The data represents a composite of several parental trials taken at Stanton, MN; Glen Haven, WI; and Washington, IA. In addition to being much shorter and earlier than B73, the leaf canopy of 764 is less upright than that of B73, particularly the top two leaves, which angle 0 to 5° from stalk on B73, and 15 to 25° from stalk on 764. 764 also has a slightly darker green color than B73. At this time of writing, we know of no other publically available early B73 recoveries which closely resemble 764. It is slightly earlier, slightly smaller than Northrup King 794, a close sisterline which was developed concurrently from a different F₂ plant from the same population. 764 is a unique line.

OBJECTIVE DESCRIPTION OF VARIETY
CORN (ZEA MAYS)

NAME OF APPLICANT(S) Northrup King Co.	FOR OFFICIAL USE ONLY
ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) P.O. Box 959 Minneapolis, MN 55440	PVPO NUMBER 8700036
	VARIETY NAME OR TEMPORARY DESIGNATION 764

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. or) when number is either 99 or less or 9 or less.

1. TYPE:

1 = SWEET 2 = DENT 3 = FLINT 4 = FLOUR 5 = POP 6 = ORNAMENTAL

2. REGION WHERE BEST ADAPTED IN THE U.S.A.:

1 = NORTHWEST 2 = NORTHCENTRAL 3 = NORTHEAST 4 = SOUTHEAST
5 = SOUTHCENTRAL 6 = SOUTHWEST 7 = MOST REGIONS

3. MATURITY (In Region of Best Adaptability):

(Under "comments" (pg. 3) state how heat units were calculated)

DAYS FROM EMERGENCE TO 50% OF PLANTS IN SILK

HEAT UNITS

DAYS FROM 50% SILK TO OPTIMUM EDIBLE QUALITY

HEAT UNITS

DAYS FROM 50% SILK TO HARVEST AT 25% KERNEL MOISTURE

HEAT UNITS

4. PLANT:

CM. HEIGHT (To tassel tip)

CM. EAR HEIGHT (To base of top ear)

CM. LENGTH OF TOP EAR INTERNODE

Number of Tillers:

1 = NONE 2 = 1-2 3 = 2-3 4 = > 3

Number of Ears Per Stalk:

1 = SINGLE 2 = SLIGHT TWO-EAR TENDENCY
3 = STRONG TWO-EAR TENDENCY 4 = THREE-EAR TENDENCY

Cytoplasm Type:

1 = NORMAL 2 = "T" 3 = "S" 4 = "C" 5 = OTHER (Specify) _____

5. LEAF (Field Corn Inbred Examples Given):

Color:

1 = LIGHT GREEN (HY) 2 = MEDIUM GREEN (WF9) 3 = DARK GREEN (B14) 4 = VERY DARK GREEN (K1)

Angle from Stalk (Upper half):

1 = < 30° 2 = 30-60° 3 = > 60°

Sheath Pubescence:

1 = LIGHT (W22) 2 = MEDIUM (WF9)
3 = HEAVY (OH26)

Marginal Waves:

1 = NONE (HY) 2 = FEW (WF9) 3 = MANY (OH7L)

Longitudinal Creases:

1 = ABSENT (OH51) 2 = FEW (OH56A)
3 = MANY (PA11)

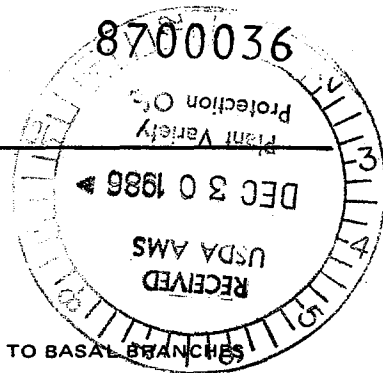
Width:

CM. WIDEST POINT OF EAR NODE LEAF

Length:

CM. EAR NODE LEAF

NUMBER OF LEAVES PER MATURE PLANT



6. TASSEL:

NUMBER OF LATERAL BRANCHES

Branch Angle from Central Spike:

1 = $< 30^\circ$

2 = $30-40^\circ$

3 = $> 45^\circ$

Penduncle Length:

CM. FROM TOP LEAF TO BASAL BRANCHES

Pollen Shed:

1 = LIGHT (WF9)

2 = MEDIUM

3 = HEAVY (KY21)

Anther Color:

1 = YELLOW

2 = PINK

3 = RED

4 = PURPLE

5 = GREEN

Glume Color:

6 = OTHER (Specify) _____

Pollen Restoration for Cytoplasm (o = Not Tested, 1 = Partial, 2 = Good)

"T"

"S"

"C"

OTHER (Specify Cytoplasm and degrees of restoration) _____

7. EAR (Husked Ear Data Except When Stated Otherwise):

CM LENGTH

MM. MID-POINT
DIAMETER

1

GM. WEIGHT

Kernel Rows:

1 = INDISTINCT

2 = DISTINCT

NUMBER

1 = STRAIGHT

2 = SLIGHTLY CURVED

3 = SPIRAL

Silk Color (Exposed at Silking Stage):

1 = GREEN

2 = PINK

3 = SALMON

4 = RED

Husk Color:

FRESH

1 = LIGHT GREEN

2 = DARK GREEN

3 = PINK

DRY

4 = RED

5 = PURPLE

6 = BUFF

Husk Extension: (Harvest Stage)

1 = SHORT (Ears Exposed) 2 = MEDIUM (Barely Covering Ear)

3 = LONG (8-10CM Beyond Ear Tip)

4 = VERY LONG (> 10 CM)

Husk Leaf:

1 = SHORT (< 8 CM)

2 = MEDIUM (8-15 CM)

3 = LONG (> 15 CM)

Shank:

CM LONG

NO. OF INTERNODES

Position at Dry Husk Stage:

1 = UPRIGHT

2 = HORIZONTAL

3 = PENDENT

Taper:

1 = SLIGHT

2 = AVERAGE

3 = EXTREME

Drying Time (Unhusked Ear):

1 = SLOW

2 = AVERAGE

3 = FAST

8. KERNEL (Dried):

Size (From Ear Mid-Point):

MM LONG

MM. WIDE

MM. THICK

Shape Grade (% Rounds)

1 = < 20

2 = 20-40

3 = 40-60

4 = 60-80

5 = > 80

1 **Pericarp Color:** 1 = COLORLESS 2 = RED-WHITE CROWN 3 = TAN 4 = BRONZE
 5 = BROWN 6 = LIGHT RED 7 = CHERRY RED
 8 = VARIEGATED (Describe) _____

1 **Aleurone Color:** 1 = HOMOZYGOUS 2 = SEGREGATING (Describe) _____

1 1 = WHITE 2 = PINK 3 = TAN 4 = BROWN 5 = BRONZE 6 = RED
 7 = PURPLE 8 = PALE PURPLE 9 = VARIEGATED (Describe) _____

2 **Endosperm Color:** 1 = WHITE 2 = PALE YELLOW 3 = YELLOW 4 = PINK-ORANGE 5 = WHITE CAP.

Endosperm Type:

3 1 = SWEET (su1) 2 = EXTRA SWEET (sh2) 3 = NORMAL STARCH 4 = HIGH AMYLOSE STARCH
 5 = WAXY STARCH 6 = HIGH PROTEIN 7 = HIGH LYSINE 8 = OTHER (Specify) _____

2 8 GM. WEIGHT /100 SEEDS (Unsize Sample)

9. COB:

2 5 MM. DIAMETER AT MID-POINT

Strength: 1 = WEAK 2 = STRONG

Color: 3 1 = WHITE 2 = PINK 3 = RED 4 = BROWN
 5 = VARIEGATED 6 OTHER (Specify) _____

10. DISEASE RESISTANCE (0 = Not Tested, 1 = Susceptible, 2 = Resistant):

1 STALK ROT (Diplodia)	1 STALK ROT (Fusarium)	1 STALK ROT (Gibberella)
1 NORTHERN LEAF BLIGHT	0 SOUTHERN LEAF BLIGHT	0 SMUT
2 SOUTHERN RUST	0 CORN SMUT	0 BACTERIAL WILT
0 BACTERIAL LEAF BLIGHT	0 MAIZE DWARF MOSAIC	0 STUNT
0 OTHER (Specify) _____		

11. INSECT RESISTANCE (0 = Not Tested, 1 = Susceptible, 2 = Resistant):

2 CORNBORER	0 EARWORM	0 SAPBEETLE	0 APHID
0 ROOTWORM (Northern)	0 ROOTWORM (Western)		
0 ROOTWORM (Southern)	0 OTHER (Specify) _____		

12. VARIETIES MOST CLOSELY RESEMBLING THAT SUBMITTED FOR THE CHARACTERS GIVEN:

CHARACTER	VARIETY	CHARACTER	VARIETY
Maturity		Kernel Type	
Plant Type		Quality (Edible)	
Ear Type		Usage	

REFERENCES:

U.S. Department Agriculture. Yearbook 1937.

Corn: Culture, Processing, Products. 1970 Avi Publishing Company, Westport, Connecticut. (Numerous Authors)

Emerson, R.A., G.W. Beadle, and A.C. Fraser. A Summary of Linkage Studies in Maize. Cornell A.E.S., Mem. 180. 1935.

The Mutants of Maize. 1968. Crop Science Society of America. Madison, Wisconsin.

Stringfield, G.H. Maize Inbred Lines of Ohio. Ohio A.E.S. Bul. 831. 1959.

Butler, D.R. 1954 - A System for the Classification of Corn Inbred Lines - PhD. Thesis, Ohio State University.

COMMENTS: (Temp Maximum + Temp Minimum/2-50 = Heat Units (Fahrenheit Temperature))

EXHIBIT E

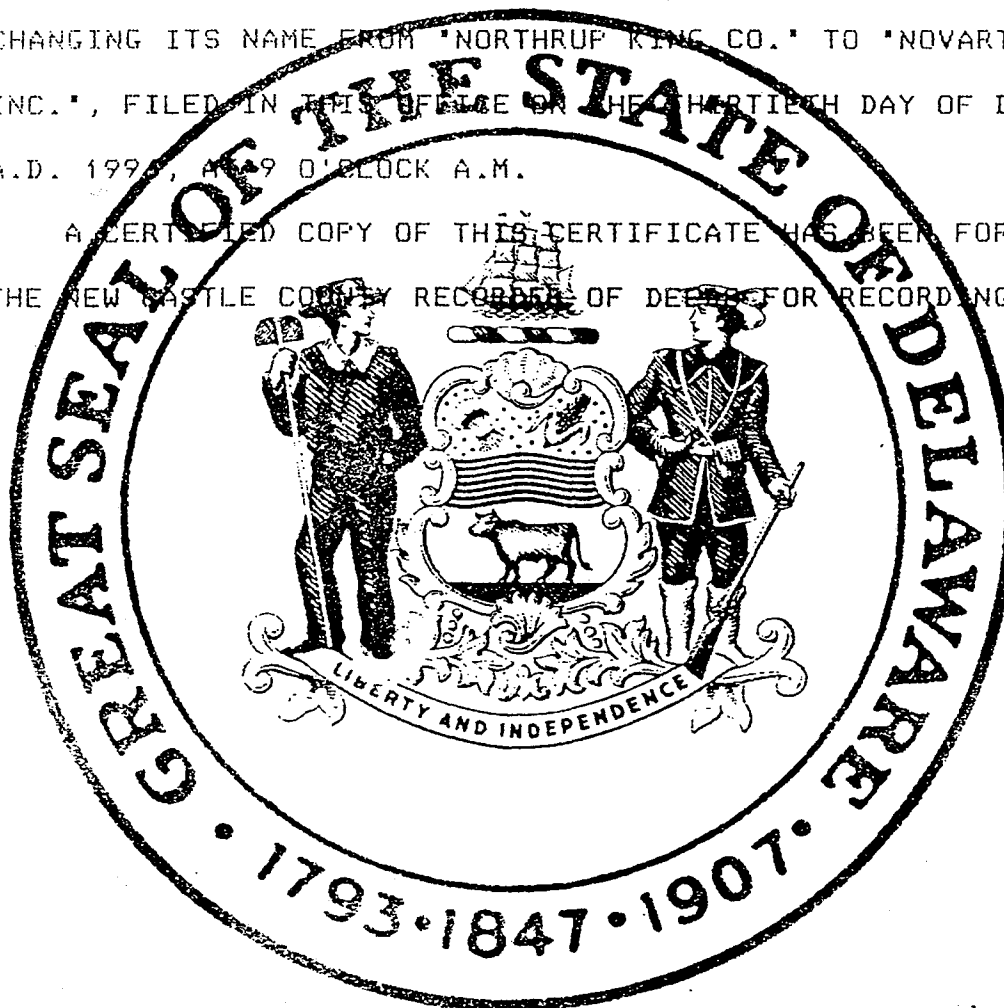
Statement of the Basis of Applicant's Ownership

Dent corn inbred 764 was developed by the Northrup King Co. corn breeding staff from germplasm sources cited in Exhibit A of the application. Northrup King believes that the inbred is novel as defined in the Plant Variety Protection Act, and therefore, that Northrup King Co. is the sole owner of the inbred.

Office of the Secretary of State

I, EDWARD J. FREEL, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF AMENDMENT OF "NORTHROP KING CO.", CHANGING ITS NAME FROM "NORTHROP KING CO." TO "NOVARTIS SEEDS, INC.", FILED IN THIS OFFICE ON THE THIRTIETH DAY OF DECEMBER, A.D. 1995, AT 9 O'CLOCK A.M.

A CERTIFIED COPY OF THIS CERTIFICATE HAS BEEN FORWARDED TO THE NEW CASTLE COUNTY RECORDER OF DEEDS FOR RECORDING.



Edward J. Freel

Edward J. Freel, Secretary of State

0829320 8100

960389892

AUTHENTICATION:

8267947

DATE:

12-31-96

CERTIFICATE OF AMENDMENT OF CERTIFICATE OF INCORPORATION
OF
NORTHROP KING CO.

It is certified that:

1. The name of the corporation (hereinafter called the "Corporation") is Northrup King Co.

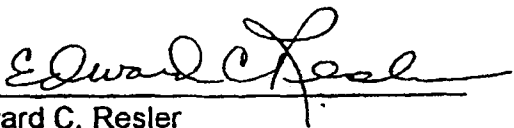
2. The Certificate of Incorporation of the Corporation is hereby amended by striking out Section 1 thereof and by substituting in lieu of said Section the following new Section.

1. The name of the Corporation is Novartis Seeds, Inc.

3. The amendment of the certificate of incorporation herein certified has been duly adopted and written consent has been given in accordance with the provisions of Sections 228 and 242 of the General Corporation Law of the State of Delaware.

4. The effective date of the amendment herein certified shall be January 1, 1997.

Signed on December 27, 1996.


Edward C. Resler
Vice President & Secretary